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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,495	07/31/2003	Brian K. Aegerter	6884-66364-01	4402
61090	7590	01/05/2007	EXAMINER	
KLARQUIST SPARKMAN, LLP			VINH, LAN	
121 S.W. SALMON STREET			ART UNIT	PAPER NUMBER
SUITE 1600			1765	
PORTLAND, OR 97204				
SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE		DELIVERY MODE	
3 MONTHS	01/05/2007		PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No.	Applicant(s)	
	10/632,495	AEGERTER ET AL.	
	Examiner Lan Vinh	Art Unit 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 23 October 2006.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-18,20-24,26-34,52-59 and 65-71 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 1-18,20-24 and 67-71 is/are allowed.
- 6) Claim(s) 26,27,34,52-59,65 and 66 is/are rejected.
- 7) Claim(s) 28-33 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The rejection(s) of claims 26-34 under 35 U.S.C. 112, second paragraph have been withdrawn in view of amended claim 26.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 52 is rejected under 35 U.S.C. 102(b) as being anticipated by Shinbara (US, 4788,994)

Shinbara discloses a method for treating wafer with liquid, the wafer/workpiece having a front/first side and an opposing back/second side and a peripheral edge defined between the first and second side, the method comprises:

placing the wafer/workpiece in a housing/reaction chamber (fig. 1)
supplying a first fluid provided by nozzle 22 to the chamber to expose the front/first side and the peripheral edge to the first fluid while excluding at least a major portion of the back/second side from exposure to the first fluid, wherein the major portion of the second side excludes an outer margin of the second side (col 6, lines 60-65, fig. 1-2)

Art Unit: 1765

4. Claim 53-55 are rejected under 35 U.S.C. 102(b) as being anticipated by Shinbara (US 4,788,994)

Shinbara discloses a method for treating wafer with liquid, the wafer/workpiece having a front/first side and an opposing back/second side and a peripheral edge defined between the first and second side, the method comprises:

placing the wafer/workpiece in a housing/chamber that includes an upper portion/ first chamber portion receiving the first side of the wafer/workpiece and a lower portion/second chamber portion receiving the second side of the wafer/workpiece, a perimeter portion receiving the edge of the wafer, a fluid nozzle 22 proximates the edge of the wafer (fig. 1)

supplying a first fluid provided by nozzle 22 to the first chamber portion to expose the front/first side to the first fluid while excluding any portion that is not an outer margin of the back/second side from exposure to the first fluid, the first fluid flow through the outlet 22 in the edge portion of the wafer (col 6, lines 60-65; fig. 1)

Regarding claims 54-55, Shinbara discloses exposing the edge of the wafer and the edge of the back side/second side to the first fluid (fig. 1-2)

5. Claim 56-59 are rejected under 35 U.S.C. 102(b) as being anticipated by Shinbara (US 4,788,994)

Shinbara discloses a method for treating wafer with liquid, the wafer/workpiece having a front/first side and an opposing back/second side and a peripheral edge defined between the first and second side, the method comprises:

placing the wafer/workpiece in a housing/chamber that includes an upper portion/ first chamber portion receiving the first side of the wafer/workpiece and a lower portion/second chamber portion receiving the second side of the wafer/workpiece, a perimeter portion receiving the edge of the wafer (fig. 1)

supplying a first fluid provided by nozzle 22 to the first chamber portion to expose the front/first side and the edge/outer margin of the second side to the first fluid while excluding the remainder of the back/second side from exposure to the first fluid, the first fluid flow through the outlet 22 in the edge portion of the wafer (col 6, lines 60-65; fig. 1-2)

The limitation of claim 57 has been discussed above

Regarding claim 58, fig. 1 of Shinbara shows a seal 1 against the peripheral edge of the wafer

Regarding claim 59, Shinbara discloses supplying a second fluid provided by a nozzle 20 to the back/second side of the wafer (col 6, lines 55-60)

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 65-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinbara (US 4,788,994) in view of Ohmi et al (US 5,487,398)

Shinbara discloses a method for treating wafer with liquid, the wafer/workpiece having a front/first side and an opposing back/second side, a beveled edge on the back side/an outer margin on the second side and a peripheral edge defined between the first and second side, the method comprises:

placing the wafer/workpiece in a housing/chamber that includes an upper portion/ first chamber portion receiving the first side of the wafer/workpiece and a lower portion/second chamber portion receiving the second side of the wafer/workpiece, a perimeter portion receiving the edge of the wafer (fig. 1-2)

supplying a first fluid provided by nozzle 22 to the first chamber portion to expose the front/first side and the beveled edge on the back side/an outer margin on the second side the to the first fluid while excluding at least a major portion of the second side from exposure to the first fluid (col 6 , lines 59-62; fig. 1)

supplying a second fluid/etchant provided by nozzle 20 to the second chamber portion to expose the back/second side to the second fluid (col 6, lines 60-65)

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Unlike the instant claimed invention as per claim 65 Shinbara fails to specifically disclose that the first fluid comprises an etchant for removal of metal/copper Ohmi discloses a method for cleaning wafer comprises a step of using an etchant comprises of HF and hydrogen peroxide to remove copper impurities from a wafer (col 4, lines 50-55)

One skilled in the art at the time the invention was made would have found it obvious to modify Shinbara method by using a first fluid/etchant for removal of metal as per Ohmi because Ohmi discloses that it is preferably to use an chemical solution comprises HF and hydrogen peroxide to realize high-cleanliness cleaning with chemical solution free from secondary contamination of an object (col 9, lines 32-45)

8. Claims 26-27, 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinbara (US 4,788,994) in view of Tsuji (US 5,454,901)

Shinbara discloses a method for treating wafer with liquid, the wafer/workpiece having a front/first side and an opposing back/second side and a peripheral edge defined between the first and second side, the method comprises:

placing the wafer/workpiece in a housing/chamber that includes an upper portion/ first chamber portion receiving the first side of the wafer/workpiece and a lower portion/second chamber portion receiving the second side of the wafer/workpiece, a perimeter portion receiving the edge of the wafer (fig. 1)

supplying a first fluid provided by nozzle 22 to the first chamber portion to expose the front/first side to the first fluid while contacting the peripheral edge of the second side/no

more than an outer margin of the second side with the first fluid (col 6 , lines 59-62; fig. 1-2)

Unlike the instant claimed inventions as per claims 26-27, Shinbara fails to specifically disclose that the first fluid comprises an etchant for removal metal comprises HF and hydrogen peroxide, the HF at a level of 0.4-0.6 wt %

Tsuji discloses a process for treating semiconductor substrate comprises a step of treating the semiconductor substrate with a solution includes HF (0.1 to 10 wt %) and hydrogen peroxide (0.1 to 15 wt %) to remove metallic impurities (see abstract)

Hence, one skilled in the art at the time the invention was made would have found it obvious to modify Shinbara method by treating the semiconductor substrate with a solution includes HF (0.1 to 10 wt %) and hydrogen peroxide as per Tsuji because Tsuji discloses that the optimum HFconcentration are 0.1 to 10 wt % (col 6, lines 12-15)

Regarding claim 34, Shinbara discloses a step of rotating/spinning the housing/chamber (fig. 1)

Allowable Subject Matter

9. Claims 28-33 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 1-18, 20-22, 23-24, 67-71 allowed.

The following is an examiner's statement of reasons for allowance:

Regarding claim 1, the cited prior art of record fails to disclose or suggest a process for treating an electrochemically processed workpiece comprises a step of placing the workpiece in a reaction chamber that includes a first chamber portion receiving the first side of the workpiece and a second chamber portion receiving the second side of the workpiece, the first chamber portion and the second chamber portion being defined by separable first and second reactor members that cooperatively support the workpiece, in combination with the rest of the steps of claim 1

Regarding claim 23, the cited prior art of record fails to disclose or suggest a process for treating an electrochemically processed workpiece comprises a step of supplying a second fluid to the second chamber portion to expose the second side to the second fluid, wherein at least one of the first and second fluids comprises an etchant for removal of a metal or oxide film from an exposed surface portion of the workpiece; and wherein a metal film is at least partially etched from the first side of the workpiece by the first fluid, the first fluid comprising an etchant, in combination with the rest of the steps of claim 23

Regarding claim 67, the cited prior art of record fails to disclose or suggest a process for treating an electrochemically processed workpiece comprises a step of supplying a second fluid to the second chamber portion to expose the second side to the second fluid, the first and second fluids being supplied concurrently to the first and second sides of the workpiece, and wherein the first fluid comprises the etchant and the second fluidcomprises an aqueous rinse, the first and second fluids being concurrently supplied

to the first and second sides, respectively, during etching of metal or oxide film from the first side of the workpiece, in combination with the rest of the steps of claim 67

Response to Arguments

10. Applicant's arguments filed 10/23/2006 with respect to the rejection(s) of claim 26, 52, 53, 56, have been fully considered but they are not persuasive.

The applicants argue that nothing in the "994 patent teaches or suggests exposing the first side and second side of a wafer while excluding at least a major portion of the second side from exposure to the first fluid, wherein the at least a major portion of the second side excludes an outer margin of the second side because Shinbara (US 4,788,994) discloses that the first and second surfaces of the wafer W are exposed to the fluids. This argument is unpersuasive because it is not in commensurate with the scope of claim 52 since claim 52 recites a step of " supplying a first fluid to the chamber to expose the first side and the peripheral edge to the first fluid while excluding at least a major portion of the second side from exposure to the first fluid, wherein the at least a major portion of the second side excludes an outer margin of the second side". Since Shinbara discloses supplying a first fluid provided by nozzle 22 to the chamber to expose the front/first side and the peripheral edge to the first fluid while excluding at least a major portion of the back/second side from exposure to the first fluid, wherein the major portion of the back side/second side excludes a beveled edge of the back side/an outer margin of the second side (col 6, lines 60-65, fig. 1-2), Shinbara teaching meets the requirement of claim 52.

The applicants argue that the 994 patent does not teach or suggest exposing one portion of a surface of the wafer to a fluid while excluding exposure of another portion of that same surface from the fluid. This argument is unpersuasive because it is not in commensurate with the scope of claimed invention since the claimed inventions specifically require “supplying a first fluid to the chamber to expose the first side and the peripheral edge to the first fluid while excluding at least a major portion of the second side from exposure to the first fluid”.

11. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



LV
December 29, 2006